1875MNRAS..35..401L

Zone *d*, has still been narrowly defined, but not so much so as last year. At times it has appeared much brighter than at others, but generally ill defined.

Zone 5.—This Polar Zone has not undergone much apparent change since last year. Twice a narrow and very dark belt has been seen running across it; and once, when it was very conspicuous, a small narrow projection was noticed, obliquely uniting 4 with 5. Nothing of this kind was noticed last year in this locality.

The colours of *Jupiter* this year have been more varied than usual, and, on the best nights for definition, have appeared decidedly darker than formerly. Only on two occasions were Mr. Lassell's bright spots detected, and then with a reduced aperture, on the southern belts; and at those times the planet was near opposition, and definition more than ordinarily good.

The transit of the Satellites, with their shadows, have been noticed on many occasions. The most curious phenomena have been indicated by Satellite III. It has frequently appeared as a dark spot when near mid-transit, but on nearing either edge has appeared bright. At times the satellite presented an elongated appearance east and west, while its disk was dark, as in mid-transit, but has been noticed to gradually assume its general outline as it neared the edge of the planet: this was specially noticed on April 9. The same thing has repeatedly been seen with Satellites I. and II., but was less marked than with Satellite III. On one occasion Satellite I. was observed slightly elongated when near mid-transit, but like III. returned gradually to its proper shape while nearing the edge of the disk.

The weather in Auckland for nearly two months before opposition was all that could be desired for observation, but after that date cloudy and unsettled weather set in. Thus the original system of observation was broken, and finally for the season had to be abandoned.

Note on a certain Structure in the Umbræ of Solar Spots.

By Colonel Tennant, R.E.

(*Extract from a Letter to Warren De La Rue, Esq.*)

"On June 28 I sent you a description of what I had seen of the Sun. I said I was not sure about a certain *structure* in the umbræ of solar spots. Curiously enough, I have found since a communication from Mr. Langley (*Monthly Notices*, Vol. xxxiv., p. 255), which goes over much of the same ground.

"As to the 'rice grains,' it is quite clear that they are not *smooth-surfaced*. Hence one sees light and shade on the surfaces, and the degree is very variable even with slight changes of shade.

Downloaded from http://mnras.oxfordjournals.org/ at University of British Columbia on July 2, 2015

© Royal Astronomical Society • Provided by the NASA Astrophysics Data System

1875MNRAS..35..404N

I use an achromatized dark prism, which is the only way of getting sufficient command over the tint of the surface. The swelling, as it were, of the grains when more light is admitted, and their contraction when a darker tint is used, are marked; and I can think of no better description than that I gave you for their appearance, that is, the appearance of an attempt at a flat tint on very rough drawing-paper. This is of course closely analogous to Herschel's, of a subsidiary flocculent precipitate, and must be so from the way paper is made.

"As to penumbræ, I cannot say so much: they have always seemed to me more filamentous than what I understand you (*Memoirs*, Vol. xxxiii.) as rice-grains. I have been mostly attracted by the *umbra*, and thus have used more light probably than was best for penumbra; but the appearance has been rather of fascines of semi-transparent sticks, which I took for blurred willow-leaves. I will pay more attention in future to the appearance of these. The view with my strong light is very beautiful. I sometimes almost felt as if a spot were the entrance of a deep cave bordered by brilliantly-lighted icicles.

"The most remarkable thing in Mr. Langley's letter is his description of umbra structure. 'Filaments of immeasurable fineness are at times seen projected on the umbræ, looking collectively like carded wool,' p. 258. 'The whole umbra is seen at times to be nearly or wholly made up of sunken banks of the filaments,' p. 259. You will note that this is almost identical with my description in my letter to you—'a thin flock of cotton wool on black velvet.' Surely I, with a 6-inch aperture, and Mr. Langley, with a 13-inch, have seen the same thing."

Colonel Tennant remarks in the same letter that he has had good views of *Saturn* and *Mars*. "The same evening that I observed *Saturn*, crape ring, and all, I saw the companion of *Antares* staring; and on two occasions lately I have seen *Mars* well. I have several times looked for the companion of *Antares*, but I never before could get it clear of the blurr. So you will judge that I do not get much definition as a rule."

Roorkee, 1875, *August* 16.

Note on the Position of the Equinoxes. By Prof. Simon Newcomb.

In the *Monthly Notices* for May 1875, page 350, an erroneous statement is attributed to Dr. Gyldén, which, though unimportant in itself, may tend to spread a serious misapprehension respecting the position of the Equinox, to be deduced from the observations of the Sun made at the principal Observatories. The discordance of the results for the position of the Equinox may be seen from the following table, which shows the outstanding corrections to the Right Ascensions given in my paper in the

Downloaded from http://mnras.oxfordjournals.org/ at University of British Columbia on July 2, 2015

© Royal Astronomical Society • Provided by the NASA Astrophysics Data System